

What is claimed is:

1. A method of manufacturing an SOI semiconductor device, comprising steps of:

providing an SOI substrate having a support substrate, a first insulation film and a semiconductor layer, the semiconductor layer being formed on the support substrate via the first insulation film;

forming at least one transistor and an element isolation region on the semiconductor layer in the SOI substrate;

covering the at least one transistor and the element isolation region with a second insulation film;

forming a first opening section which penetrates the second insulation film, the element isolation region and the first insulation film to expose the support substrate;

forming a first source interconnect, a first drain interconnect, and a first gate interconnect which are electrically connected to the at least one transistor, and forming dummy interconnects which are connected with the first source interconnect, first drain interconnect and first gate interconnect and are electrically connected with the support substrate via the first opening section, on the second insulation film; and

disconnecting the dummy interconnects to electrically insulate the first source interconnect, first drain interconnect and first gate interconnect from the support substrate.

2. The method of manufacturing an SOI semiconductor device according to Claim 1, wherein the dummy interconnects include a contact section which is buried into the first opening section and is electrically shorted with the support substrate, and a dummy section which electrically connects the contact section to the first source interconnect, first drain interconnect and first gate interconnect, and is formed on the second insulation film, and the step of disconnecting the dummy interconnections includes disconnecting the dummy section.

3. The method of manufacturing an SOI semiconductor device according to Claim 2, further comprising the step of covering the first source interconnect, first drain interconnect, first gate interconnect and the dummy interconnects with a third insulation film, and the step of disconnecting the dummy section after forming the third insulation film.

4. The method of manufacturing an SOI semiconductor device according to Claim 3, further comprising the step of creating a second source interconnect, second drain interconnect and second gate interconnect which are electrically connected to the first source interconnect, first drain interconnect and first gate interconnect respectively on the third insulation film, and the step of disconnecting the dummy section after forming the second source interconnect, second drain interconnect and second gate interconnect.

5. The method of manufacturing an SOI semiconductor device according to Claim 4, further comprising the step of covering the second source interconnect, second drain interconnect and second gate interconnect with a fourth insulation film, and the step of disconnecting the dummy section after forming the fourth insulation film.

6. The method of manufacturing an SOI semiconductor device according to Claim 5, further comprising the step of creating a second opening section for exposing the dummy section in the third and fourth insulation films, and the step of disconnecting the dummy section after forming the second opening section.

7. The method of manufacturing an SOI semiconductor device according to Claim 1, wherein the dummy section is disconnected by a laser.

8. The method of manufacturing an SOI semiconductor device according to Claim 1, wherein the dummy section is disconnected by etching.

9. The method of manufacturing an SOI semiconductor device according to Claim 5, wherein

the first opening section includes two opening sections, the contact section includes first and second contact sections which are buried into the two opening sections of the first opening section respectively,

the dummy section includes first and second dummy sections which electrically connect the first and second contact sections to the first source interconnect and first

drain interconnect respectively, and a third dummy section which electrically connects one of the first and second contact sections to the first gate interconnect, and when the step of disconnecting the dummy sections includes disconnecting the first to third dummy sections.

10. The method of manufacturing an SOI semiconductor device according to Claim 9, further comprising the step of creating a second opening section having two opening sections which penetrate the third and fourth insulation films to expose the first to third dummy sections, and the step of disconnecting the first to third dummy sections after forming the second opening section.

11. The method of manufacturing an SOI semiconductor device according to Claim 10, wherein the first to third dummy sections are disconnected by a laser via the second opening section.

12. The method of manufacturing an SOI semiconductor device according to Claim 10, wherein the forming of the second opening section and the disconnecting of the first to third dummy sections is performed by a single etching process.

13. The method of manufacturing an SOI semiconductor device according to Claim 5, wherein

the first opening section includes one opening section,
the contact section includes a first contact section,
and

the dummy section includes first to third dummy sections which electrically connect the first contact section to the

first source interconnect, first drain interconnect and first gate interconnect respectively, and

when the step of disconnecting the dummy section includes disconnecting the first to third dummy sections.

14. The method of manufacturing an SOI semiconductor device according to Claim 13, further comprising the step of creating a second opening section which includes one opening section such that the one opening section penetrates the third and fourth insulation films to expose the first to third dummy sections, and the step of disconnecting the first to third dummy sections after forming the second opening section.

15. The method of manufacturing an SOI semiconductor device according to Claim 14, wherein the first to third dummy sections are disconnected by a laser via the second opening section.

16. The method of manufacturing an SOI semiconductor device according to Claim 14, wherein the forming of the second opening section and the disconnecting of the first to third dummy sections is performed by a single etching process.

17. An SOI semiconductor device, comprising:

an SOI substrate including a support substrate, a first insulation film and a semiconductor layer formed on the support substrate via the first insulation film;

at least one transistor and an element isolation region formed on the semiconductor layer;

a second insulation film covering the at least one transistor and the element isolation region;

a first opening section which penetrates the second insulation film, element isolation region and first insulation film;

a first source interconnect, a first drain interconnect and first gate interconnect which are formed on the second insulation film and are electrically connected to the at least one transistor; and

dummy interconnects which are electrically connected to the first source interconnect, first drain interconnect and first gate interconnect, and are disconnected after being created by being electrically connected to the support substrate via the first opening section.

18. The SOI semiconductor device according to Claim 17, further comprising:

a third insulation film which covers the first source interconnect, first drain interconnect and first gate interconnect; and

a second source interconnect, second drain interconnect and second gate interconnect which are electrically connected to the first source interconnect, first drain interconnect and first gate interconnect respectively, and are formed on the third insulation film.

19. The SOI semiconductor device according to Claim 17, wherein the first opening section includes two opening sections, and the dummy interconnects electrically connect

the first source interconnect and first drain interconnect to the support substrate via the two opening sections of the first opening section respectively, and electrically connect the first gate interconnect to the support substrate via one of the two opening sections of the first opening section.

20. The SOI semiconductor device according to Claim 17, wherein the first opening section includes one opening section, and the dummy interconnects electrically connect the first source interconnect, first drain interconnect and gate interconnect to the support substrate via the one opening section.